(hereinafter Shimuzu). Claims 13-15, 17, 24 and 25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pintsov in view of Crane et al., U.S. Patent No. 4,531,231 (hereinafter Crane). Claims 16, 18, 26 and 27, as well as claims 3-6 and 9-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Pintsov in view of Crane, and further in view of Guo et al. "Classification trees with neural network feature extraction," Proceedings IEEE Computer Society Conference on Computer Vision and Pattern Recognition, June 1992 (hereinafter Guo). By the present amendment, claims 1, 7, 13 and 18 have been amended, and the rejections traversed in view of the following remarks. Entry of the response and reconsideration of the claims under the provisions of 37 C.F.R. 1.116 is earnestly solicited.

Applicants thank the Examiner for the telephone interview held on September 20, 2002. In the interview, applicants (by the undersigned attorney) generally submitted that the prior art of record fails to disclose, suggest or provide any motivation for a primary recognizer having (at least) the claimed limitation in which the primary recognizer makes its recognition result on a chirograph, and thereafter essentially does not make any determination as to whether that chirograph (e.g., based on the recognition result) belongs to a set of easily confused chirographs that may benefit from secondary recognition. Instead, a secondary recognizer may (or may not) be selected for further recognition, external to the primary recognizer. Such limitations are not taught or suggested in the prior art, let alone in the specific manner claimed, and further provide numerous and substantial benefits over the prior art's teachings. For at least these reasons, applicants submit that claims directed towards this subject matter are clearly patentable over the

prior art of record, as a matter of law. The essence of applicants' position, including that set forth in the interview, is generally incorporated into the remarks below.

I. *The Office action has failed to establish obviousness as a matter of law*

As a matter of law, obviousness may not be established using hindsight obtained in view of the teachings or suggestions of the applicants. *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1551, 1553, 220 USPQ 303, 311, 312-13 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). To guard against the use of such impermissible hindsight, obviousness needs to be determined by ascertaining whether the applicable prior art contains any suggestion or motivation for making the modifications in the design of the prior art article in order to produce the claimed design. The mere possibility that a prior art teaching *could* be modified such that its use would lead to the particular limitations recited in a claim does not make the recited limitation obvious, *unless the prior art suggests the desirability of such a modification*. *See In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (emphasis added).

As discussed below, the prior art contains nothing at all that supports the conclusion that any of the claims are obvious. Instead, the Office action has relied on the lack of detail in the prior art's teachings to speculate that the prior art somehow *could* be modified to reach the present invention, as discussed below, which is unquestionably contrary to law.

II. *Pintsov fails to disclose or suggest claim limitations, and further teaches away from the present invention.*

By law, in order to establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In addition, "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Further, if prior art, in any material respect teaches away from the claimed invention, the art cannot be used to support an obviousness rejection. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997).

Considering first Pintsov taken alone, (as the Office action has done in rejecting claims 1, 2, 7, 8, 12, 20, 21 and 23), the universal classifier system of Pintsov, cited in the Office action at page 3 as corresponding to the recited primary recognizer, simply does not teach or suggest the primary recognizer as defined in these claims for a number of significant reasons. For one, Pintsov expressly teaches that for any input data that the universal classifier determines to be unambiguous, the universal classifier system of Pintsov directly outputs a character code, labeled 6 in Pintsov, as the recognition result. Pintsov, col. 3, lines 41-43, and FIG. 4. However, the fact that the universal classifier system of Pintsov is programmed to decide that some data is not ambiguous teaches away from the primary recognizer of the present invention, which need not be programmed with such knowledge of ambiguity, and specifically (e.g., in claim 1) "does not make any

decision as to whether that [initially recognized] chirograph is of a set of easily confused chirographs."

For another, the universal classifier system of Pintsov specifically detects possibly ambiguous results, and when so detected, calls a specialist classifier trained or built to recognize ambiguous data supplied from the universal classifier system. Pintsov, col. 3, lines 44-47 and FIG. 4. Thus, Pintsov teaches directly away from the recited primary recognizer of the present invention, which as claimed simply outputs a shape index, while specifically *not* making any such ambiguity-related decisions or actions.

The difference between the two models is not insignificant. As set forth in the background section of applicants' specification:

> While attempts have been made to manually code recognizers to discern between particularly troublesome pairs, there are many sets of characters which are easily confused for one another. This makes the coding process very labor intensive and tedious. Moreover, the result of the coding depends on one or more person's best guesses as to what to test for to distinguish the characters. This is not necessarily very optimal, as there are many possibilities for what best differentiates two (or more) close characters. Indeed, the best of such systems do not substantially reduce the error rate. Lastly, each time the recognizer is changed, the set of characters which are confused by the recognizer also changes, requiring that much of the labor-intensive coding process be repeated.
>
> Specification, page 2, lines 1-14.

Notwithstanding the fact that Pintsov teaches implementing a system with the specific drawbacks that applicants' model has overcome, the Office action has attempted to use Pintsov's lack of detail to conclude that Pintsov could somehow be modified to reach the present invention. As discussed above, such a holding is contrary to law. Indeed, the only way that this could be accomplished is by filling in missing parts of

Pintsov's disclosure with applicants' teachings, to essentially twist Pintsov's model into applicants' invention, which is impermissible by law.

For example, the Office action has attempted to use the fact that Pintsov has put the term "call" is in quotation marks (with respect to Pintsov's universal classifier "calling" a specialist classifier) as somehow suggesting applicants' claimed subject matter. What the Office action is apparently alleging is that the quotes make it "ambiguous as to whether Pintsov [sic] system does a specific call to the classifier or based upon the output of the universal classifier another portion of the system makes the call." Office action, page 4.

Thus, instead of looking at the plain teachings of Pintsov, which unmistakably state, as well as show, that the universal classifier makes the call, the Office action has attempted to find some ambiguity in Pintsov based on mere quotation marks, and then based upon that alleged ambiguity, further contend that Pintsov could be somehow modified into the present invention. This is a classic example of impermissible hindsight, and exemplifies why the law requires that to establish obviousness, the prior art must suggest the desirability of such a modification. *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Such alleged ambiguity based on quotation marks is clearly unreasonable and insufficient evidence of any such suggestion of the desirability of such a modification; on the contrary, applicants submit that if anything, had Pintsov recognized the advantages of applicants' invention, then Pintsov would have taught it instead of Pintsov's model. Indeed, based on the other prior art of record, it appears that the level of ordinary skill in the art at the time the invention was made was to develop a

wholly integrated recognizer, as did Pintsov, rather than have anything like a primary recognizer that does not have to be specifically coded to recognize chirographs that belong to confusion sets, followed by independent secondary recognizers, as essentially claimed by applicants.

In sum, Pintsov teaches a different model, and fails to suggest the desirability of any such modification into applicants' claimed invention. Applicants strongly disagree that mere quotation marks provide a reasonably sufficient basis for making such a leap in logic that essentially has to override the rest of Pintsov's teachings (and that of the other prior art), which teach away from applicants' model and its numerous advantages. The Office action has thus failed to establish how applicants' separate and independent operation was obvious at the time the invention was made, and further has been unable to provide a secondary prior art reference clearly demonstrating that Pintsov can be modified or combined therewith, including the required motivation to modify or combine in a manner that accomplishes the present invention. When no prior art reference or references of record convey or suggest the missing knowledge, impermissible hindsight, wherein that which only the inventor taught is used against its teacher, becomes apparent. Moreover, applicants submit that any such combination would be impermissible, as Pintsov teaches away from the present invention, by teaching that the universal classifier system needs to be designed to recognize ambiguity and the need to resolve it. See Pintsov, column 4, lines 4-8.

Likewise, the fact that a universal classifier *system* (numbered 8 in Pintsov) can be made up of numerous universal classifiers (presumably those numbered 5 in FIG. 3) does

not mean that the universal classifier system 8 of Pintsov suddenly operates differently than how it is represented in FIGS. 4 and 5 and how it is consistently described in the rest of the specification. Pintsov's silence as to how such a system might operate is again wholly insufficient as evidence of obviousness, and again requires that the Office action rely on applicants' teachings to convert Pintsov into something simply not taught or suggested thereby. What is certain is that in Pintsov, the universal classifier system knows about suspicious characters and the need to detect and handle them differently, and therefore does not teach or suggest the primary recognizer of the present invention, which does not. More particularly, column 4, lines 4-10 of Pintsov makes clear that the universal classifier system is pre-programmed to detect such suspicious characters from non-suspicious ones, and act differently for each, which specifically teaches away from the primary recognizer of the present invention. Although Pintsov is short on details (as the Office action recognizes), those details supplied, including FIG. 4 of Pintsov (in which the universal classifier outputs the final ASCII result, not the specialist classifiers), support applicants' interpretation of Pintsov, rather than the speculative interpretations set forth on page 2 of the Office action. Consistent throughout Pintsov, the universal classifier system of Pintsov is designed to 1) detect ambiguity and 2) know about and invoke specialist classifiers when it detects ambiguity.

For at least the foregoing reasons, applicants submit that the Office action, by law, has failed to establish *prima facie* obviousness of the claimed invention, as all of the claim limitations are neither taught nor suggested by the prior art. Reconsideration and

withdrawal of the rejections based on Pintsov is respectfully requested and earnestly solicited.

Moreover, regarding the rejections of claims 14 and 24-26, the Office action has put forth inconsistent arguments with respect to the teachings of Pintsov. In rejecting claim 14, the Office action contends that the value passed to the specialist recognizer is in ASCII form, that is, a code point. This is incorrect, as the ASCII value of Pintsov is what the universal classifier uses to *call* the specialist recognizer (it is nonsensical to recognize an ASCII character; what is being recognized in Pintsov is the handwritten or printed image that is unknown). Notwithstanding, applicants recognize that Pintsov's universal classifier does ultimately output at least an ASCII character as a recognition result, which is a subset of the set of code points.

However, Pintsov does not consider outputting anything but a valid code point, and in no way teaches or suggests outputting a shape index that is not itself a code point as specifically recited in claims 24-26. In fact, because Pintsov teaches that the universal classifier system is the only entity that outputs the recognition result, e.g., an ASCII character, Pintsov teaches that the universal classifier system always outputs a valid recognition result in the form of a code point. In support of its rejection, the Office action has (incorrectly) contended that the "probable identity" referred to at column 3, line 48 of Pintsov need not be in the form of a code point, however, read in its full context, it is unmistakable that the "probable identity" of Pintsov is actually the "probable identity of a candidate *character*," which is a code point and nothing else. This is even confirmed in column 4, lines 20-23 of Pintsov wherein it is noted that "the character determined by the

selected specialist classifier may be the same character determined as being most probable by the universal classifier system 8."

In sum, Pintsov teaches that its universal classifier system must output a code point, and thus claims 24-26 are separately patentable over Pintsov. Reconsideration and withdrawal of the rejections of claims 24-26 is also requested.

III. The combination of Pintsov with Crane, Shimuzu and/or Guo is impermissible by law

For a combination of prior art references to render an invention obvious, there must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. *In re Oetiker*, 977 F.2d 1443, 1447, 24 USPQ2d 1443, 1446 (Fed. Cir. 1992). A finding of obviousness on any other basis would constitute impermissible hindsight. *See Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985). Otherwise, combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of impermissible hindsight. *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

In the present application, the Office action has essentially done what is not proper by law, and used applicants' teachings as a blueprint, using an (incorrectly) modified Pintsov for some of the claimed limitations, and, without any specific evidence of motivation to combine, has hunted for other references that might supply the limitations

present in the application but missing from Pintsov. Instead of presenting any specific evidence of motivation to combine, the Office action has only made conclusory statements that are wholly unrelated to the claims in order to allege obviousness. However, such broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence of obviousness. *Id.*

For example, in rejecting claims 19 and 22, the Office action refers to a single, final character recognition block (FIG. 1, element 17) that works with distance values and feature vectors, to illogically allege that this is a per-index unique secondary recognizer as claimed. In support, the Office action contends that it would be obvious to "use the writer specific feature vectors of Shimuzu to augment the system of Pintsov to increase the ratio of a character recognition system employing a universal recognition dictionary without requiring that special operations be performed before character recognition is performed on the handwriting of a new writer." Not only is such an allegation merely a broad, conclusory statement not found in the prior art of record or elsewhere, but even if true, it is wholly unrelated to the claimed subject matter of claims 19 and 22, which is essentially directed towards having a unique secondary recognizer for each shape index that may be output by the primary recognizer. In other words, at best Shimuzu appears to be able to recognize things differently per writer, not per shape index. For at least the foregoing reasons, claims 19 and 22 are clearly patentable over any permissible combination of Pintsov and/or Shimuzu. Reconsideration and withdrawal of the rejections of claims 19 and 22 is respectfully requested.

Moreover, regarding the combination of Pintsov with Guo, applicants note that Guo teaches away from any such combination, by teaching that its modified classification tree is a whole recognizer unto itself that provides many benefits over CART trees and neural networks. If anything, this would essentially lead an objective reader to conclude that there is no need for secondary recognition. In the specific example of handwriting recognition, Guo explicitly points out (at page 186, section 4.2) that "it is a 10 class problem to recognize the numbers 0 - 9," which is like the typical recognition attempts referred to in applicants' background section. Moreover, Guo separately tests his "CTNNFE" recognition method on samples against a neural network recognition method (see Guo, Fig. 4.2) and determines that his single classification tree method is superior in many ways to other methods, again leading the reader away from the present invention. Applicants reiterate that when prior art, in any material respect teaches away from the claimed invention, the art cannot be used to support an obviousness rejection. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997). Applicants respectfully request withdrawal of the §103(a) rejections of the claims based in any way on Guo.

CONCLUSION

Claims 1-27 are patentable. For one, the Examiner has incorrectly rejected the rejected claims and has failed to establish a *prima facie* case of obviousness as a matter of law, as the claimed limitations are not described or suggested, expressly or inherently, in any the references. Further, the combination of references is impermissible as a matter of

law, as the references 1) teach away from the present invention and/or 2) do not provide any motivation to combine (or modify). For at least the foregoing reasons, no new issues have been raised by this amendment, and thus the applicants request that the Examiner enter the Amendment and reconsider and withdraw the rejections of the pending claims.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney at (425) 836-3030.

Respectfully submitted,

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Appendix A
(marked up copy of the claims amended herein)

1. (Thrice Amended) A method of recognizing chirographs input into a computer system, comprising:

providing a primary recognizer for converting chirographs to shape indexes, the primary recognizer providing output including a shape index when a chirograph is input thereto;

providing a plurality of secondary recognizers to convert chirographs into code points, and associating the secondary recognizers with at least some of the shape indexes;

receiving a chirograph;

providing the chirograph to the primary recognizer and receiving a shape index therefrom, the primary recognizer providing the shape index without making any decision as to whether that chirograph is of a set of easily confused chirographs; and

[without further decision by the primary recognizer,] determining whether one of the secondary recognizers is associated with the shape index, and if so, selecting that secondary recognizer as a selected secondary recognizer and passing the chirograph to the selected secondary recognizer, the secondary recognizer returning a code point.

7. (Twice Amended) A method of recognizing a chirograph input into a computer system, comprising:

receiving a chirograph;

providing the chirograph to a primary recognizer to make a first decision as to a shape index that corresponds to the chirograph; and

without the primary recognizer making a [further] decision as to whether that chirograph is of a set of easily confused chirographs;

selecting a secondary recognizer based on the shape index;

providing the chirograph to the secondary recognizer; and

returning the recognition result from the secondary recognizer.

13. (Thrice Amended) A system for recognizing chirographs input into a computing device, comprising:

a primary recognizer configured to determine a shape index from a chirograph;

a plurality of secondary recognizers, each secondary recognizer corresponding to at least one shape index;

an interface configured to receive a chirograph and provide it to the primary recognizer, the primary recognizer providing a shape index corresponding to the chirograph without making any decision as to whether that chirograph is of a set of easily confused chirographs;

a selection mechanism that selects a selected secondary recognizer based on the shape index, [without further decision by the primary recognizer]; and

the selected secondary recognizer determining a recognition result from the chirograph and returning the recognition result.

18. (Twice Amended) A computer-readable medium having computer-executable instructions, comprising:

receiving a chirograph;

providing the chirograph to a primary recognizer and receiving recognition information therefrom; and

without the primary recognizer making a [further] decision as to whether that chirograph is of a set of easily confused chirographs:

determining whether the recognition information corresponds to a recognized result or has a value indicative of a CART tree being associated therewith; and

if the recognition information corresponds to a recognized result, returning the recognized result, and if the recognition information has the value indicative of the CART tree being associated therewith, providing chirograph information to the CART tree and returning a recognition result therefrom.